

CLAIMS

1. A method of providing an audio signal with an associated video signal, comprising the steps of:
 - 5 decoding an encoded audio stream to provide an audio signal and audio description data; and
 - providing an associated first video signal at least part of whose content is selected according to said audio description data.
- 10 2. A method according to claim 1, further comprising the earlier step of encoding said audio signal and said audio description data into said encoded audio stream.
3. A method according to claim 1 or 2, further comprising the step of decoding a second video signal from an encoded video stream.
- 15 4. A method according to any one of the preceding claims, wherein said providing step comprises:
 - using said audio description data to select visual description data appropriate to the content of said audio signal;
 - 20 constructing video content from said selected visual description data; and
 - providing said first video signal including the constructed video content.
5. A method according to claim 4, further comprising the step of extracting said visual description data from a transport stream.
- 25 6. A method according to claim 5, wherein said visual description data is extracted from private data within said transport stream.
7. A method according to claim 5 or 6 when dependent on at least claim 3, wherein said transport stream further comprises said encoded video and audio streams.
- 30 8. A method according to claim 7, wherein said audio description data in said encoded audio stream includes identification data and clock reference data for use with said visual description data in said same transport stream.
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9. A method according to claim 8, wherein descriptors corresponding to said identification data and clock reference data are stored in private sections of said visual description data.
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10. A method according to any one of claims 7 to 9, wherein said audio stream, said video stream and said visual description data are multiplexed into said transport stream which is transmitted in a television signal.
- 10 11. A method according to any one of claims 7 to 10, wherein said step of using said audio description data to select appropriate visual description data comprises selecting visual description data from the same transport stream.
- 15 12. A method according to any one of claims 4 to 11, further comprising the step of storing said extracted visual description data.
13. A method according to claim 12 when not dependent on claim 11, wherein said step of using said audio description data to select appropriate visual description data comprises selecting stored visual description data.
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14. A method according to any one of claims 4 to 13, further comprising the step, prior to the step of extracting said visual description data, of encoding said visual description data.
- 25 15. A method of delivering programme-associated data to generate relevant visual display for audio contents, said method comprising the steps of:
encoding an audio signal and audio description data associated therewith into an encoded audio stream;
encoding visual description data; and
30 combining said encoded audio stream and said visual description data.
16. A method according to claim 15, wherein said visual description data can be combined into a first video signal.

17. A method according to claim 15 or 16, further comprising encoding a second video signal into an encoded video stream.
18. A method according to claim 17, further comprising combining said encoded
5 video stream with said visual description data and said encoded audio stream into a transport stream.
19. A method according to claim 18, further comprising transmitting said transport stream in a television signal.
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20. A method according to claim 18 or 19, wherein said visual description data does not relate to the encoded video signal in the same transport stream.
21. A method according to claim 18, 19 or 20, wherein said visual description data
15 does not relate to the encoded audio signal in the same transport stream.
22. A method according to any one of claims 4 to 14 and 18 to 21, wherein said transport stream is an MPEG stream.
- 20 23. A method according to any one of claims 15 to 22 in combination with the method of any one of claims 1 to 14.
24. A method according to any one of claims 3 to 23, wherein said visual
25 description data comprises one or more of the group comprising: video clips, still images, graphics and textual descriptions.
25. A method according to any one of claims 3 to 24, wherein said visual
description data is classified for use with at least one of: at least one style of audio content, at least one theme of audio content and at least one type of event for
30 which it might be suitable.
26. A method according to any one of the preceding claims, wherein said audio
description data comprises data relating to at least one of the group comprising:
35 singer identification, group identification, music company identification, service provider identification and karaoke text.

27. A method according to any one of the preceding claims, wherein said audio description data comprises data relating to the style of said audio signal.
- 5 28. A method according to any one of the preceding claims, wherein said audio description data comprises data relating to the theme of audio signal.
29. A method according to any one of the preceding claims, wherein said audio description data comprises data relating to the type of event for which said audio
10 signal might be suitable.
30. A method according to any one of the preceding claims, wherein said audio description data is encoded within frames of said encoded audio stream, which frames also contain said audio signal.
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31. A method according to claim 30, wherein said audio description data is encoded as ancillary data within audio frames of said audio stream.
32. Apparatus for providing an audio signal with an associated video signal,
20 comprising:
audio decoding means for decoding an encoded audio stream to provide an audio signal and audio description data; and
first video signal means for providing an associated first video signal at least part of whose content is selected according to said audio description data.
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33. Apparatus according to claim 32, further comprising video decoding means for decoding a second video signal from an encoded video stream.
34. Apparatus according to claim 32 or 33, wherein said first signal means
30 comprises:
selecting means for using said audio description data to select visual description data appropriate to the content of said audio signal;
constructing means for constructing video content from said selected visual description data; and

means for providing said first video signal including the constructed video content.

35. A method according to claim 34, further comprising extracting means for
5 extracting said visual description data from a transport stream.
36. Apparatus according to claim 35, wherein said extracting means is operable to
extract said visual description data from private data within said transport stream.
- 10 37. Apparatus according to claim 35 or 36 when dependent on at least claim 32,
operable when said transport stream further comprises said encoded video and
audio streams.
- 15 38. Apparatus according to claim 37, operable when said audio description data in
said encoded audio stream includes identification data and clock reference data
for use with said visual description data in said same transport stream.
- 20 39. Apparatus according to claim 38, operable when descriptors corresponding to
said identification data and clock reference data are stored in private sections of
said visual description data.
- 25 40. Apparatus according to any one of claims 37 to 39, operable when said audio
stream, said video stream and said visual description data are multiplexed into
said transport stream which is transmitted in a television signal.
41. Apparatus according to any one of claims 37 to 40, wherein said selecting
means is operable to select appropriate from the same transport stream as the
visual description data.
- 30 42. Apparatus according to any one of claims 35 to 41, further comprising storing
means for storing said extracted visual description data.
43. Apparatus according to claim 42, wherein said selecting means is operable to
select appropriate visual description data from the storing means.

44. A system for delivering programme-associated data to generate relevant visual display for audio contents, comprising:
audio encoding means for encoding an audio signal and audio description data associated therewith into an encoded audio stream;
5 description data encoding means for encoding visual description data; and
combining means for combining said encoded audio stream and said visual description data.
45. A system according to claim 44, further comprising video encoding means for
10 encoding a second video signal into an encoded video stream.
46. A system according to claim 45, wherein said combining means is operable to combine said visual description data, said encoded audio stream and said encoded video stream into a transport stream.
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47. A system according to claim 46, wherein said combining means is operable to combine said visual description data with encoded video signal to which it does not relate, in the same transport stream.
- 20 48. A system according to claim 46 or 47, wherein said combining means is operable to combine said visual description data with encoded audio signal to which it does not relate, in the same transport stream.
49. A system according to any one of claims 46 to 48 or apparatus according to
25 any one of claims 35 to 43, wherein said transport stream is an MPEG stream.
50. A system according to any one of claims 44 to 50 in combination with the apparatus of any one of claims 31 to 43.
- 30 51. A system according to any one of claims 44 to 50 or apparatus according to any one of claims 31 to 43 and 50, wherein said visual description data comprises one or more of the group comprising: video clips, still images, graphics and textual descriptions.

52. A system according to any one of claims 44 to 51 or apparatus according to any one of claims 31 to 43, 50 and 51, wherein said visual description data is classified for use with at least one of: at least one style of audio content, at least one theme of audio content and at least one type of event for which it might be suitable.
53. A system according to any one of claims 44 to 52 or apparatus according to any one of claims 31 to 43 and 50 to 52, wherein said audio description data comprises data relating to at least one of the group comprising: singer identification, group identification, music company identification, service provider identification and karaoke text.
54. A system according to any one of claims 44 to 53 or apparatus according to any one of claims 31 to 43 and 50 to 53, wherein said audio description data comprises data relating to the style of said audio signal.
55. A system according to any one of claims 44 to 54 or apparatus according to any one of claims 31 to 43 and 50 to 54, wherein said audio description data comprises data relating to the theme of audio signal.
56. A system according to any one of claims 44 to 55 or apparatus according to any one of claims 31 to 43 and 50 to 55, wherein said audio description data comprises data relating to the type of event for which said audio signal might be suitable.
57. A system according to any one of claims 44 to 56 or apparatus according to any one of claims 31 to 43 and 50 to 56, wherein said audio encoding means is operable to encode said audio description data within frames of said encoded audio stream, which frames also contain said audio signal.
58. A system or apparatus according to claim 57, wherein said audio encoding means is operable to encode said audio description data as ancillary data within audio frames of said audio stream.

59. A method of delivering programme-associated data to generate relevant visual display for audio contents, said method, comprising:
encoding audio description data relevant to the audio contents in one or more audio elementary streams; and
5 encoding visual description data created for audio contents for generating a visual display; wherein
said visual description data is relevant to at least one of the groups comprising: a generic audio style, a generic audio theme, special events and specific objects.
- 10 60. The method of claim 59, further comprising the preceding steps of:
specifying preferred visual displays for the frames of said audio elementary stream; and
constructing said audio description data using information relating to said preferred visual displays.
- 15 61. The method of claim 58, wherein said specifying step comprises identifying at least one of:
the style of the audio content;
the theme of said audio frame;
20 an event associated with said audio frame; and
keywords in any lyrics of said audio frame;
and further comprising specifying a most preferred visual display after the identifying step.
- 25 62. The method of claim 60 or 61, wherein said specifying step comprises specifying the preferred visual display for each of said frames.
63. The method of any one of claims 59 to 62, further comprising inserting said audio description data in ancillary data sections of said audio frames in said audio
30 elementary stream.
64. The method of any one of claims 59 to 63, wherein said constructing step comprises:
specifying a unique identification code;
35 specifying a distribution flag for indicating distribution rights;

specifying the data type;
inserting text description describing the audio content;
inserting data code describing said preferred visual display; and
inserting user data code for generating the visual display.

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65. The method of any one of claims 59 to 64, further comprising:
encoding background video into a video elementary stream; and
encoding the audio contents into said one or more audio elementary streams;
and wherein said audio description data describes said audio contents.

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66. The method of any one of claims 59 to 65, wherein the step of encoding visual
description data comprises encoding the visual description data into private data to
be carried in a transport stream.

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67. The method of claims 65 and 66, further comprising multiplexing said video
elementary stream, said one or more audio elementary streams and said private
data into a transport stream for broadcast.

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68. The method of any one of claims 59 to 67, further comprising delivering said
audio description data and said video description data to a receiver for decoding
and for generating said visual display.

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69. The method of any one of claims 59 to 68, further comprising the step of
providing said visual description data by downloading it from external media or
creating it at a user terminal.

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70. A method of delivering Karaoke text and timing information to generate a
Karaoke visual display for an audio song, said method comprising:
encoding said audio song into an audio elementary stream;
inserting clock references for use in synchronising decoding of said Karaoke
text and timing information with said audio song in said audio elementary stream;
inserting channel information of said audio song in said audio elementary
stream;

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- inserting said Karaoke text information for said audio song in said audio
elementary stream; and

inserting said Karaoke timing information for generating scrolling said Karaoke text in said audio elementary stream.

71. The method of any one of claims 1 to 31 and 59 to 70 being used in digital TV
5 broadcast and or reception.
72. Apparatus for generating relevant visual display for audio contents, comprising:
storing means for storing visual description data that generate the visual
display;
10 playing means for playing said audio contents carried in an audio elementary
stream;
extracting means for extracting audio description data for said audio contents
from said audio elementary stream;
selecting means for selecting preferred visual description data from said
15 storing means using information from said audio description data; and
executing means for executing said visual description data to generate said
visual display.
73. Apparatus according to claim 72, wherein said executing means is operable to
20 execute interactive programmes carried in said visual description data.
74. Apparatus according to claim 72 or 73, further comprising:
receiving means for receiving a multiplexed transport stream containing one or
more of said audio elementary streams and said visual description data carried as
25 private data.
75. A system for connecting audio and visual contents, comprising:
downloading means for downloading audio elementary streams for said audio
contents and for downloading visual description data;
30 creating and editing means for creating and editing audio description data
relevant to said audio contents carried in said audio elementary streams and for
creating and editing visual description data for generating said visual contents;
selecting means for selecting said visual description data that best fits the
audio description data for generating a visual display;
35 user operable means for modifying the behaviour of said selecting means; and

processor means for executing said visual description data to generate the display.

- 5 76. A system according to claim 75, wherein said selecting means comprise cognitive and search engines.
77. A system according to claim 75 or 76, being a home entertainment system.
- 10 78. A method of providing an audio signal with an associated video signal substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.
- 15 79. A method of delivering programme-associated data to generate relevant visual display for audio contents substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.
- 20 80. Apparatus for providing an audio signal with an associated video signal constructed and arranged to operate substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.
81. A system for providing an audio signal with an associated video signal constructed and arranged to operate substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.
- 25 82. A system for delivering programme-associated data to generate relevant visual display for audio contents constructed and arranged to operate substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.
- 30 83. Apparatus according to any one of claims 32 to 43, 51 to 58, 72 to 74 and 80 or a system according to any one of claims 44 to 58, 75 to 77, 81 and 82, operable according to the method of any one of claims 1 to 31, 59 to 71, 78 and 79.